### **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



United States Department of

Agriculture

Montana

Agricultural Experiment Stallon

Bozeman,

Montana

U.S. DEPT. OF ACRICUIT TAIL

NATIONAL AGRICULTISTS CITEBRARY

RECEIVED

JUN 2 5 1982

PROCUREMENT SETTION CURRENT SERIAL RECURDS

PROCUREME!!!

UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE P.O Boi 98 BOJEMAN, MONTINI 59715

PITALLY TOP TRIVATE USE, \$300



### FIRST CLASS MAIL

National Agricultural Library U. S. Department of Agriculture Current Scrial Record Beltsville, MD 20705

### MONTANA WATER SUPPLY OUTLOOK

Snowpack and Streamflow Forecasts as of February 1, 1982



THE MONTANA WATER SUPPLY OUTLOOK IS A PUBLICATION OF THE U.S. SOIL CONSERVATION SERVICE. THE SCS ADMINISTERS THE COOPERATIVE SNOW SURVEY PROGRAM IN COOPERATION WITH OTHER FEDERAL, STATE, AND PRIVATE AGENCIES, ORGANIZATIONS, AND INDIVIDUALS.

THE REPORT IS PREPARED BY SCS, SNOW SURVEY AND WATER SUPPLY FORECAST UNIT, P. O. Box 98, Bozeman, Montana,

PHILLIP E. FARMES, SHOW SURVEY SUPERVISOR
DOHALD J. HUFFMAN, HYDROLOGIST
DENICE SCHILLING, STATISTICAL ASSISTANT
GLEHR BERDINA, HYDROLOGIC TECHNICIAN
RICHARD FIKE, HYDROLOGIC TECHNICIAN



#### SNOTEL to give more data

New equipment that will determine the daily maximum, minimum, and average temperature is being installed at some SNOTEL sites in Montana. This new equipment is capable of transmitting data from isotopic snow and soil moisture gages and should reduce some maintenance problems.

Four key high elevation locations, three sites with isotopic equipment, and two sites where special data is being collected, are scheduled to receive this new equipment. As funds become available for replacement, additional sites will be retrofitted with this new generation electronics.

One additional site is scheduled for installation this spring. It will bring the total number of active SNOTEL sites in Montana to 65.

Persons interested in obtaining data from SMOTEL or having questions about this telemetry system should feel free to contact the SCS.

#### Statewide snowpack

#### Water content doubles during January

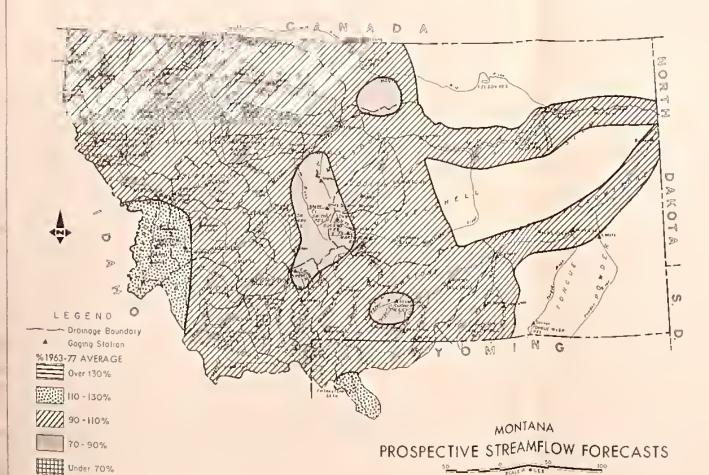
January was a good snowfall month over most of Montana. In many locations, the amount of water stored in the mountain snowpack is nearly double that measured on January 1. Frequent storms and cool Lemperatures have also contributed to a substantial snow accumulation in many valley areas. The mountain snowpack is less dense than normal causing many oversnow travelers to comment on the amount of "deep powder snow." The effects of wind also seem to be more prevalent this year.

Nost of the state's mountain watersheds have near average amounts of water stored in the snowpack but there are some areas below and above average.

The below average areas are the northwest corner of the state, the Bearpaw and Highwood Mountains in north central Nontana, a small area in the Red Rock River drainage and parts of the Yellowstone River drainage. Above average snow areas are the Yellowstone River headwaters and the Bitterroot River and its adjacent drainages.

Generally, about two-thirds of the seasonal snow accumulation is in place by February 1. With nearly one-third of the snow season left, some changes can occur, particularly if the remaining months continue to produce above average snowfall.

In most areas, the soils under the snowpack are drier than usual and some of the snowmelt water will be required to fill the soil mantle before runoff begins. Next month, nearly all of the snow courses will be mensured to obtain a complete inventory of this year's snow resource.



### Statewide streamflow

#### to be near average

With a few exceptions, most of the state can expect near average runoff this spring and summer.

Above average runoff is expected in the Bitterroot River and adjacent Rock Creek, the extreme headwaters of the Big Hole River and the Yellowstone Lake area.

The areas with below average runoff are portions of the Stillwater River and Rock Creek in the Yellowstone River drainage, small streams in central Montana, and Beaver Creek in the Bearpaw Mountains.

The mountain snowpack is much better than in recent years and should help sustain streamflows well into the main irrigation season.

# Missouri River & Hudson Bay Drainages

STREAMFLOW FORECASTS		THIS TEAM		Fast atcorn		20	THIS YEAR		PAST RECORD	
OTACAMII COM TOMO		£ 01 °	(0.2)	116561495	THE BEAUTY AND THE PERSON OF T		Thousand Presmini			
BASIL STRI AM MOTH I ORECAST POINT		thousand does fall	despile   mlos	س و ۱۱۱۱ه یا	0 .0.0 0	_  _	gioi j deo	Vecesile Sistemion	CHITE	A = 6+1 \$4
	PERIND		APRIL -	SEPTEMBE	R			APRIL	- JULY	
		102	93	88.4	110		96.0	93	89.2	103
RED ROCK RIVER near Monida (1)		170	99	133 .	171		146	99	131	148
DEAUTPHEAD RIVER DEAT Grant (2)		215	95	133 .	226		187	95		196
REAVERIEAD RIVER at Barratts (2)		104	99		105		88.0	99		89.0
RURY RIVER near Alder	4 4 5		109		792		800	110		730
RIG HOLE RIVER near Helrose	4 4 4	860	90		103		87.0	90		96.7
BOULDER RIVER near Boulder		93.0	94		21.5		18.3	95		19.2
WILLOW CREEK near Harrison		20.2	93	405	523		382	93	320	409
MADISON RIVER near Gravling (3)		486			892		676	96	602	706
MADISON RIVER near McAllister (4)		850	95	716	572		456	93		488
CATLATIN RIVER ment Gateway		527	92		30.3		24.0	92		26.2
INFLOW MIDDLE CREEK RESERVOIR near Bozeman (5)		27.8	92		47.4		37.3	91		41.0
HYALITE CREEK near Bozeman (6)		42.6	90		649		481	86		557
GALLATIN RIVER at Logan	4000	\$\$5	86				2300	99	2619	2,330
MISSOURI RIVER at Toston (7)	4000	2655	99	2817	2,671		17.5	88		19.8
SHEEP CREEK near White Sulphur Springs		20.0	88		580		520	98	457	529
SUN RIVER at Gibson Dam (8)		565	97	498	0		116	87	-5,	134
BELT CREEK near Monarch		127	87		146		3635	100		3,640
MISSOURI RIVER at Fort Benton (9)		4147	100		4,148		226	93		244
TWO MEDICINE CREEK near Browning (10)		238	92		259		104	90		116
BADGER CREEK near Browning.		120	90		133		500	94	408	532
MARIAS RIVER near Shelby		535	93	432	577		4240	100	400	4,238
MISSOURI RIVER at Virgelle (11)		4780	100		4,793		4675	102		4,586
MISSOURI RIVER near Landusky (11)		5323	102		5,214			89		5.5
NORTH FORK MUSSELSHELL RIVER near Delpine		5.7	89		6.4		4.9	87		57.6
SOUTH FORK MUSSELSHELL RIVER above Martinsdale .		53.0	86		61.5		50.0			4,381
MISSOURI RIVER below Fort Peck Dam (11)		5027	102		4,929		4468	102		4,301
MILK RIVER at Eastern Crossing		275*	99		278					
MILK RIVER at Eastern Crossing (12)		108*	98		111			0.0		12 220
INFLOW LAKE SAKAKAWEA, ND (11)		13315	99		13,450		12110	99		12,239
INFOR PURE SERVICUATE, NO (11)										
SASKATCHEWAN RIVER BASIN								0.0	100	115
SWIFTCURRENT CREEK at Sherburne (13)		121	92	121	132		107	93	109	
ST. MARY'S RIVER near Babb (13)		472	96		498		410	96		426
SI. MARI S KIVER HEST BOOK (13)										

\*For period March through September

- (1) Adjusted for storage in Lima
- Reservoir.
  (2) Adjusted for storage in Lima and
- Clark Canyon Reservoirs.
  (3) Adjusted for storage in Hebgen
- Lake.

  (4) Adjuated for storage in Hebgen
  Lake and Ennia Lake.

  (5) Sum of West Fork Hyalite Creek and
  East Fork Hyalite Creek above the
- (6) Adjusted for atorage in Hiddle
- Creek Reservoir.

  (7) Adjusted for alorage in Lima, ileb-gen, Ennis & Clark Conyon Reser-
- (8) Adjusted for storage in Clbson
- Reservoir & diversions.

  (9) Adjusted for storage in Lima,
  Clark Canyon, Rebgen, Ennis, Gibson, Pishkun, Willow Creek &
  Canyon Ferry Reservoirs.

  (10) Adjusted for storage in Two Bedi-
- cine Reservoir & diversions in Two Hedicine Canal. (11) Adjusted for all upstream
- reservoirs.
  (12) Flow at Eastern Crossing
- minus St. Mary's Canal. (73) Adjusted for storage in Lake





90-110%

70-90% Under 70%

#### SUMMARY OF SHOW MEASUREMENTS

SUB WATERSHED	Averaged	Latt Yaaz	Autorge +
Beaverhead	11	172	105
Ruby	3	198	108
Big Hole	7	200	117
Boulder	12	190	95
Jefferson	33	187	106
Madison	18	201	109
Gallatin	14	203	91
Missouri Headwate	r 65	195	103
West-side Missour	i		
(Toston-Cacade)	8	170	93
Smith	5	175	100
Belt-Arrow	3	199	96
Missouri Main-ste	m 16	177	96
Teton & Sun	4	258	94
Marias	3	201	106
Marins-Teton-Sun	7	221	101
Judith	5	175	100
Musselshell	5	175	100
Judith-Husselshel	1 10	175	100
Milk	7	262	103
Bear Paws	. 6	281	85
Missouri (Total)	98	193	102
, ,			
Saskatchewan			
St. Mary's	. 2	140	96
Bow River in			
Alberta	. 5	70	79

<u>Headwaters show</u> average snowpack

Below average snowpack is reported l parts of Glacier National Park in th St. Mary's River headwaters, the Bearpaw and Highwood Mountains in north central Montana, the East Gallatin River headwaters, and a small area near Red Rock Lakes in Red

Above average snow water contents were measured in the headwaters of the Big Hole River and the Madison River headwaters in Yellowstone

Mountain soils under the snowpack are drier than usual throughout most of the drainage. Considerable wind action has moved snow in the exposed and unprotected areas, and the snow

Many valley areas have above average snow accumulation due to frequent snowfalls and cool temperatures that have prevented any significant melt-

is less dense than normal.

Most of the headwaters of the Missouri River have near average amounts of water stored in the snowpack, but there are some areas with above and below average conditions.

Rock River drainage.

National Park.

#### The major portions of the Missouri River drainage are forecast to have near average streamflow during the spring and summer months. Flows

Streamflow levels near average

should hold up well into the irrigation season in most streams.

Some areas in central Montana are currently forecast to have streamflows a little below average, but many of these have some stored water to supplement late season irrigation

Depending on climatic and soil condi-tions, some runoff may be generated from valley areas when temperatures

Most irrigation and multipurpose reservoirs have near average storage levels and should fill with spring

WATER	SUPPLY	OUTLOOK	Expression es "Popos Fees, Asmigs, Lo- calita)" with Amages) to Uses Supply
			Flow Paried

STREAM 40 AREA	Spilny Season	L14e Seeton
Beaverhead	Avg	Avg
Ruby	Avg	Avg
Big Hole	Exc	Avg
Boulder	Avg	Avg
Jefferson	Avg	Avg
Madison	Avg	Avg
Gallatin	Avg	Avg
West-Side Missouri	Avg	Avg
Smith-Belt	Avg	Avg
Sun	Avg	Avg
Teton	Avg	Avg
Marias	Avg	Avg
Judith	Avg	ave
Musselshell	Avg	Avg
Milk	Exc	Avg
Bear Paws	Avg	Fair
St. Mary's	Avg	Avg

	N III TON	C.A.N	A D	A
			ETTO MANAGE	11 (100 FE)
j		HARANIES S		To their
<b>♣</b> - 33				L S H E L
8				
LEGEND Orainage Boundary Gaging Station 61963-77 AVERAGE Over 130 %				
110 - 130%		100		

IISSO	URI	RIVER	&	ΗU	DSON	BAY	DRAINAGES
				MON	ANAIN		
	MOI	MIATML	SN	!OW	WATER	EQUIV	ALENT

### SNOW SURVEY DATA

W FEBRUARY 1982		·	THIS YEAR	, ,		Wast RECORD	
ORAMAGE BISIN #1 = 3+0+ COURSE		O dig	Sna+ Oroit Horbital	* #1#+ C ~~ [100]	Coll   oa	6	
наме	Elevation				CHILL		
RCH ENLLS	7350	1/26	3.2	7.8	2.0	۰.	
SHLEY DIVIDE	4.820	1/22	3.2	7.0	1.4	-	
SHLFY LAKE	4000	1/29	2.7	5.6	1.8	-	
ADGER PASS	6900	2/03	104	28.0A	17.0	50.	
ADGER PASS PILLOW	6930	2/01	SP	24.6	15.0	-	
ALATRUO MOUNTAGO	5600	1/25	5 3	15.4	10.6	18.	
AHFIELO MOUNTAIN PILLOW	5600	1/25	SP	13.7	10.5	15.	
ARKER LIKES PILLOW	8250	2/01	SP	10.3	7.7	_	
ASIM CREEK	7130	1/28	3.3	8.0	4.2	-	
ASIN CREEK PILLON	7150	2/01	SP	5.3	4.5	-	
EAGLE SPRINGS PILLOW	8550	2/91	SP	5.9	2.4	-	
EAR PAW SKI AREA	5200	1/27	19	3.4	0.6	6.	
	7950	1/29	104	35.6	16.8	27.	
LACK HEAR	7950	1/23	S.P.	30.8	10.2	25.	
FVCE HEAR BILLOW					3.1	9.	
CACK PINE	7100	1/28	4.4	10.7		10.	
LACK PIME PILLOW	7100	1/28	SP	12.2	5.6	10.	
LOODY DICK PILLOW	7600	2/01	SP	11.6	5.5	18.	
LUF LAYE	5900	2703	8 2	20.SA	8.5	10.	
ONTUER MONALVIN BITEDA	7950	2/01	\$ P	15.4	5.7		
CAMAGA BIFFOM	6670	2/01	\$ P	5.8	4.5	3.0	
BIDGER HOWE	7250	1727	5 6	17.1	8.4	20.	
MODITA PROH 635018	7250	1/27	SP	15.5	9.2	18.	
VENERL CREEK BILLOM	6450	2/01	5.9	7.7	3.4	7.	
ARROT HASLM	9000	1/25	8.5	28.0	14.1	26.	
ARROI HASIN PILLOW	3000	1/25	\$ P	19.4	10.9	19.	
ASHE CHIEK PILLOW	7800	2/01	5 P	7.0	2.8	-	
HESSMAN RESERVOIR	6200	1/23	13	2.9	0.3	5 *	
HICKEN CREEK	4060	1/26	4.7	11.1	7.6	-	
WOLLIA WOCKSE REVOL	8600	2/01	SP	13.0	8.2	_	
OLE CREEK	7850	1/28	3 3	8.8	6.5	12.	
OLE CREEK PILLOW	7850	1/28	SP	8.0	5.6	12.	
POTTATION	5600	1728	2.5	4.8	0.1	έ.	
WOLLIG POLLANTEGO	5600	1/28	SP	4.9	0.6	4.	
OPPER BOITOM PILLOW	5200	2/01	SP	10.8	3.8	10.	
OPPER CAMP PILLOW	6950	5.101	SP	27.0	13.6	30.	
OPPER MOUNTAIN	7700	1/30	36	8.6	4.9	8.	
OYOTE HILL	4200	1/27	3.9	8.6	3.2	8.	
RYSTAL LAKE PILLOW	6100	2701	5 P	8.5	7./	-	
AISY PEAK	7600	1/28	3.8	8.2	4.4	-	
ALY COEEK	5780	1/29	4.1	10.6	4.5	8.	
ALY CREEK PILLOW	5780	2/01	SP	9.2	7.6	-	
ARKHORSE LAKE PILLOW	8700	2/01	SP	22.0	11.0		
	,				4.0	9.	
EADMIN CREEK	6450	1/27	3 6	8.6	3.1	3.	
EIDMAN CREEK PILLOW	6450	1/27	Ş P	7.7	7.9	11.	
ESERT HOUNTAIN	\$600	2703	4.2	10.9			
EVIL'S SLIDE	8100	1/26	54	15. <i>l</i> i	6.6	15.	
ISCOVERY BASIN	7050	1/28	4.1		4.4		
INIO: PILLOW	7900	2/01					
TX HILL	6400	1/30					
LK OE 1K	8000	2/01		7.6	-		
MERY CREEK	4350	2/03		12.4		11,	
MERY CREEK PILLOW	4350	2/03					
ISH CREEK	8000	1/28	3.7	9.6	4.0	-	

FISH CREEK	8000	1/28	5 /	4.0	4.0	_	
SHOW FEBRUARY 1982			TRISTLAR	Y	PAST RECORD		
DRAIMAGE BASH MATE SHOW COURSE		Quar el Surana	Seco Onoth History	•alas Continii (Inthiii	Fall Alm	Taralati Tarala	
NA)-E	Elman				Call vi z		
FISHER CREEK	9100	2701	E 5 1	22.5	16.0	28.0	
FISHER CREEK PILLOW	9100	2/01	\$ P	20.8	15.1	26.6	
RCALIE WINTHUOM ACHINA	6300	2701	SP	30.4	26.4	35.2	
FLEECER RIDGE	7500	1/29	3.9	9.4	-	8.3	
FOURTH OF JULY	3450	1/23	34	7.4	2.3 9.1	_	
FRIDAY BILL	4620	1/28	5 5 2 4	14.8	0.5	6.2	
FRHINER MEADOWS	6480 6480	1/28	S P	5.9	3.0	6.5	
FROHNER MEADOWS PILLOW GARVER CREEK	4250	1/25	33	3.?	6.6	9.1	
GARVER TREEK PILLON	4250	1/25	SP	7.0	7.5	8.1	
GIBBOYS PASS	7100	1/29	7.4	23.4	11.2	16.7	
GRAVE CREEK	4300	1/25	4.1	11.0	6.9	13.7	
GRAVE CREEK PILLOW	4300	1/25	S P	11.7	7.0	13.5	
GRIZZLY PEAK	3640	1728	30	7.6	5.5 17.1	10.9	
HAWKITS LAKE	6450	1/25 T/25	\$ 9 S P	18.8	16.0	22.1	
HAWKITS LAKE PILLOW	6450 4830	1/27	68	16.3	4.0	12.8	
HEART LAME TRAIL HEDGEN GAM	6550	1/27	40	9.6	5.2	8.9	
HELL SOUGHING DIATE	5770	1/30	6.4	17.3	14.0	23.3	
NERRIS JHNCTION	4850	172/	6.7	18.5	13.7	-	
HOLHROOM	4539	? /+) 3	5.0	11.0A	1.5	7.7	
HOOD 18400W	6600	1/26	2.7	7.0	1.8	8.1	
ROODOS BASEN	0.000	1/27	120	37.2	20.4	36.3	
HOUDOD SYZIA BIFFOR	4001	2/1)1	S P	32.4	17.0	34.6	
HOODOO CREEK	5900 6450	1/27	114	33.0	16.6 3.0	5.6	
INTERS 1100	5450	1/28	27	5.0	1.5	-	
FINGS ALFF THUSSA BYSK	7500	1/27	4.2	10.6	6.4	10.8	
KIWANIS CAMP	3720	1/27	1.4	2.1	0.6	1.3	
KRAFI (REEK PILLON	4750	2/01	\$ 8	11.7	3.6	-	
CAREALES CAMAON	6930	1150	5.6	5.9	4.7	9.1	
FUKEALLM SIDGE	7400	1/2/	2.5	5.5	4.4	8.3	
LAKEVIEW RIDGE PILLOW	7400 3100	2/01	S P S P	6.6	3.1	7.0	
LEMILI RIDGE PILCOW	0650	1/26	29	5.9	1.4	7.1	
LICE CRECK LICE CREEK PILLOW	5860	1/26	SP	6.3	4.8	6.4	
LOWER TAIM PILLOW	7930	2701	\$ P	15.9	10.4	-	
LUBRECHI FLUME	4300	2/01	3.2	5.5	0.2	4.5	
MODILIA SUFTA THOSPERT	6300	2701	SP	6.2	0.2	4.3	
LUBRECHI FORESI # 3	5450	2/05	3.5	7.6	0.6	5.5	
LUDRECHI FOREST # 4	4650	5 10 5	24	4.4	0.3	3.1	
LUBRECHT FOREST # 6	4040	2/02	2.8	5.4	0.3	5.1	
TOPRECHT MYPROPLOT	4230 7750	1/23				15.0	
MADISH PLATEAU PILIDA	7750	1/28		13.2	10.0	16.5	
MANY STACIES	4960	1/31			10.5	-	
MATY TLACIER PILLOW	4900	1/31		14.2	9.0	-	
TARIAS PASS	5250	1/30		15.5	5.2	12.0	
RAYMARD CREEK	6210	1727		8.8	3.0	10.	
MAYHARD CREEK PILLON	6210	1/27		7.3	5.1	8.5	
HONMINEHI PEAK PILLOW	0.068	2/01	SP	16.5	3.6	_	
ADULIDY RESERVOIR	6850	1/29		5.9	2.2	16.	
ISAnajoj Pruok	4400 5400	2701		15.5	7.i	14.	
TOUTT EDCK ART PILLDV	6489	2791	5 9	13.9	5.1	_	
MENUDA CHEEK BILLON	0.000	:701	3 17	13.7	7. 1		

SHOW FEBRUARY 1982	(		THIS I LAR		14457-913	1010
STRUCT ROVE IN MICH DAMPERS		Baio	5ne- 0+0 ft	#11# Conemi	Faran Control	Imikosi
энан	Elevens	al Surees	linche II	(1-0h=15	1000100	1,000 (10
et P	. 700	1./32	3.4	9.4	4.4	10./
TEN VORLO	6700 5600	1/27	2 (T	23.2	17.6	-
VENTAU VOLUMENTALIA	5550	2/01	SP	10.0	4.5	-
TEZ PERCE CAMP PILLOW TEZ PERCE CREEK	6500	1/30	2.5	5.2	1.9	5.5
VOISY HASIN	6040	2103	105	23.3	25.2	30.8
"OLLY PIENE VEIOF	5040	2/93	SP	26.1	22.3	26.6
"ORTH FK. ECK CREEK	6250	2/11	44	10.8	2.6	9.2
MORTH FK. FEK CREEK PILLOW		2791	SP	T3.%	3.5	9.3
VORTH FORE JOCKO	6330	1/2/	2 5	33.4	18.4	
NORTHEAST ENTRANCE	7400	2/01	31	7.6	2.2	7.h
HORTHEAST ENTRANCE PILLOW	7400	2/01	SP	5.9	3.6	7.2
Jelila b/s<	7150	1/30	4.9	13.8	8.8	14.3
PETERSON MEADOWS	7290	1/2R	3 1	7.0	5.2	7.1
BELEBEON NEVOORS BIFFOM	7200	1/28	SP	5.6	5.5	7,1
PICKEDO1 CREEK PILLOW	6650	2/01	SP	7.7	1.9	- 1
PICVIC GROUNDS	6500	1/29	2.0	3.9	0,4	3.3
PINE CRECK PILLOW	5730	2/01	SP	50+0	10.3	3.8
PIPESTONE PASS	7 200	1/30	1 S 7 D	3.0	11.4	25.6
POORMAN CREEK	5100	1/25	SP	19.9	22.7	22.7
PORCHDIAG CREEK PILLON	5100 6100	2/01	S.P.	5.0	1.5	-
PORCUPINE PILLOW RED TOP	5260	1/28	6.2	19.9	13.8	-
ROCKED PEAK	0003	2/01	EST	13.5	7.1	11.8
ROCKER PEAK PILLOW	9800	2 / 0 1	SP	11.6	7.7	11.0
ROCKY BOY	4700	1/27		2.4	0.6	3.4
BOCKY OOY PILLOW	4700	1/27	SP	3.3	1.7	3.5
SADDLE MOUNTAIN	7940	1/27	7 9	22.6	11.8	18.8
SABDLE MOUNTAIN PILLO4	7940	1727	S P	25.6		19.5
SHOWER FALLS	8100	1726		16.4		17.5
SHOWER FALLS PILLOW	8100	2/01		16.4		17.0
SKALKAHO SHMHII PILLOJ	7260			22.6		_
SKYLARK TRAIL PILLOW	6200			24.8		11.2
SPOTIED REAR GOUNTALT	7000					16.1
SPUR PARK	8100 8100			16.8		16.5
SPUR PARK PILLOW STANL PEAK	6050					31.0
STAHL PEAK PILLON	6050					24.1
SIORN LAKE	7780			7.9	6.2	9.6
STRYMER BASIN	6180		6.8	19.7	15.0	-
SIUARI MILL	6500	1/29	2.3	4.7		4.9
STUART MOUNTAIN	7400	1/2	7 76			23.12
SUCKER CREEK	3960					0.6
TAYLOR ROAD	4080					2.7
TEN MILE LOWER	6600					5.5 8.3
TEN WILE WIDDLE	5800					
1EN MILE UPPER	800					
TEPEE CREEK	800		1 EST			
TEPES CREEK PILLOW	800 610					
TRINKUS LAKE TRUMAN CREEK	406			9 3.		
HIAINLON VI	630			1 12.		
TWELVEHILE CREEK	560			0 23.		
TWELVENILE CREEK PILLON	560		27 S	P 18.	8 4.	2 14.4
THENTY-ONE MILE	719	50 17	29 4	9 13,	.5 6.	5 13.6
IWIN CREEKS		30 27	13 5	4 12.	, OA 3.1 , D 17.0	0 8.9
THIN LAKES	651	10 2/0	01 ES	T 38.	D 17,	30.9
TWIN LAKES PILLOW	651	10 270	) 1 \$	Р 37.	0 16.	3 30.7
1 W   Y   CARCO T TOCOM						

SHOW FEBRUARY 1982		[	TIII) 11 AR		Wiels Consent	ORG DESIGN
ORAINAGE 845IN WE OF SHOP COURSE		Don of Surroo	Size District	Flori Emilent	5 001 000	Longe
NAME	Eleven			1		
Dance Holl AND LAYE	4200	1/27	80	8.55	14.6	-
UPPER HOLLAND LAKE	5600	2/01	EST	7.5	0.5	7.3
AVED BUT	5600	2/01	Sr	7.8	2.3	8.4
WALDRON PILLOW	7800	2/01	6.5	17.3	9.2	-
WARY SPRINGS	7800	2/01	5 P	18.3	9.7	-
WARN SPRINGS PILLOW	\$450	1725	6.7	17.7	17.4	26.8
MEASEL DIVIDE	7500	1/27	2.3	5.4	2.6	7.3
WEST ROSCHUD	6700	1/29	3.6	7.3	6.5	8.9
WEST YELLOWSTOME	6700	1/29	SP	7.0	3.1	6.6
WEST YELLOWSTONE PILLDA	6.813.0	1/28	6 11	16.8	7.8	15.5
MHISKEY CREEK	6800	1/28	S.P	12.R	6.7	11.6
WHISKEY CREEK PILLOW	8700	2/01	EST	20.0	10.0	21.2
MHILE TILL		2/01	SP	17.5	9.3	17.8
NHILE HIFF БІГҒОҚ	8700	1/23	20	4.0	0.0	7.3
WILLOW CREEK	6570		5 P	5.8	3.6	-
WOOD CREEK PILLOW	5960	2701	3 1	2.4.0		
АНО						
	4100	2701	6.1	14.2	4.8	16.4
ABOVE TURKE (ID)	6400	1/31	SP	47.2	-	-
HEAR MODHIALM BILLON (10)	6589	1/27	59	15.1	8.0	14.7
31g S5HTHQ2 (10)	6580	1/29	2.8	5.0	5.1	8.3
CAMP CREEK (ID)		1/27	56	13.4	7.6	12.0
ISLAH) PARK (ID)	62 <u>90</u> 6320	1730	3.5	8.4	5.8	3.0
KILCOSE ([D)	5230	1730	7.9	23.4	7.7	21.3
LULO > 455 (10)	2	1/23	8.3	21.8	16.8	25.7
LODKOJT (10)	5250		62	17.6	6.6	12.5
HOOSE CREEK (ID)	9500	2/01	80	21.2	15.2	24.
1030H110 R106E (1b)	5200	1/27		22.2	10.0	12,1
SAVAGE PASS (ID)	6170	1/29	7.9	28.7	15.1	22.
SANTELL MOUNTAIN (19)	8720	1/27	91	23.50	8.7	
SUMSET (ID)	5540	1/26	81	13.2	4.9	10.1
TANGHER PASS (10)	6980	1/27	36	11.7	5.0	12.5
VALLEY VIEW (ID)	6690	1728	4.5	17.2	10.5	13.7
HITE SLEPHANT (10)	7710	1727	6.8	17.6		
YOMING						
	9380	1/23	5.1	13.2	9.5	15.
PACO ADMINIST (AA)		1/39	SP	15.3	-	-
REMBIDOTH LAKE PILLOW (MY)	7270	1/27	2.1	4.1	2.0	5.
13 bE:1 4.5. (dY)		2701	6.5.3	13.4	4,2	11.
( V   A ) 1 ( 1 A )	7941)	1/29	1, 1,	12.0	2.8	7.
EAST EMPRANCE CMYT	6960		1.7	3.7	0.9	5.
FIVE SPRENGS FALLS (14)	7620	1/27	3.3	8.2	3.1	6.
LAKE CAMP (AY)	7730	2701	3.0	7.0	2.4	7.
LUPITE CHEEK (MY)	7380	1/2/	4.0	7.6	3./	8.
MORRIS HASIN (WY)	7503	5/01		11.5	5.5	-
OLD FAITHFUL (AY)	7400	2701	4.5		-	-
BUSHESS BEAK BITFON (NI)	9409	2/31		20.0 35.0A		-
PITCHSTITTE PLATEAU (AY)	G S S K		ē S I		11.5	5.
STEATING POINT (NY)	756)		16	2.7	3.4	10.
SYEVAL PASS (AT)	7100			13.6	6.9	15.
CHUTS SIVIDE (AY)	7930			16.3	12.1	20.
TOGUSTEE PASS (WY)	9580			25.3	16.1	6 / 0
THE OCCUPIENT PILLIN	(49160	1/29		27.1	6 11	9.
	7650	1/2/		11.6	5 , IJ	7 .
17: JE ) 1 of (A1)		1 / 7 1	S P	13.9	-	
10:012 05/4 5[Ff0:8 (41)	3450	1/31	3.			
ADDATE NETY BIFFOR (SA)						
YOURTS PELL (AY)  Average based on 1963-77 period, A - Aerial of SP - Snow Pillow observation; water content only	bservollon	, walet coule	nì estimoted.	_	OUTLOOK	( Pa

MONTANA WATER SUPPLY OUTLOOK Page 3

MONTANA WATER SUPPLY OUTLOOK Page 2

## Columbia River Drainage

STREAMFLUM FURELASTS	Tint.	YF a D	Par	11.775	THE	THIS YEAR		PAST RECORD		THIS LEAR		нЕСОЯО
	FORE		14-OU5445		FOR	ECAST	THOUSAND	ACRL FEFT		ECAST	BIASTONE	
BASH STREAM OF CORECAST POINT	They airsit	Parcent st Parcent st	toponyes.	dicity.	Thousand Alst Fust	Period of Assign	i, 411 + 2+4	Lange	Thousand Apply to p	Piremial Aretian	\$ 41+ 114+	Ailille
F2 RIQD	A	PRIL -	SEPTEMBER	1		APRIL -	Illi V					
			- TEATRER			711 712 15	1100			APRIL -	JUNE	
MANDELLA DAMES I A . ALIA D (1)	7,030	97	/ =.		5,993	97	5 51/					
KOOTENAI RIVER helow Libby Dam (1)	242	90	6,726	7,246	227	90	5,516	6,178				
FISHER RIVER near Libby	484	90		270	462	90		253				
YAAK RIVER near Troy	8,610	96	7	537	7,495		( (0)	514	_			
KOOTENAI RIVER at Leonia (1)	8,010	90	7,941	8,883	-	97	6,601	7,727	7,270	97	4,573	6,150
INFLOW MOULTON RESERVOIR nr SUTTE (Million Gallons)	55.3	100		- 0 - 7	276	97	378	286	250	96	352	260
WARM SPRINGS CREEK AT MEYERS DAM near Anaconda (2)		109		50.7	45.1	109		41.2				
FLINT CREEK near Southern Cross (3)	18.5	100	23.8	18.5	15.5	101	20.3	15.4				
FLINT CREEK below Boulder Creek (4)	77.0	99		77.6	60.8	99		61.3				
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)	17.9	106		16.9	16.9	106		16.0				
MIDDLE FORK ROCK CREEK near Philipsburg	90.8	115		78.8	82.0	115		71.1				
NEVADA CREEK near Finn	21.2	90		23.6	19.8	91		21.8				
8LACKFOOT RIVER near Bonner	935	92		1,017	845	92		920	730	92		794
CLARK FORK RIVER above Milltown (6)	790	94		843	685	94		730	575	94		613
CLARK FORK RIVER abave Missoula	1,725	93	1,530	1,859	1,530	93	1,359	1,651	1,305		1,148	1,408
WEST FORK BITTERROOT RIVER near Conner (7)	220	118		187	205	119		172			.,	11100
BITTERROOT RIVER near Darby	715	119	445	602	660	120	401	552	575	120	339	480
SKALKANO CREEK near Hamilton	65.0	113		57.4	57.0	114		49.8			333	400
SURNT FORK CREEK near Stevensville (8)	42.5	110		38.8	37.3	110		33.6				
81TTERROOT RIVER at Missoula (9)	1,730	112		1.543	1,595	113		1,416	1,365	113		1,211
CLARK FORK RIVER below Missoula	3,455	101		3,405	3,125	102		3,069	2,670	102		2,618
CLARK FORK RIVER at St. Regls	4,566	101	3,586	4,521	4,080	001	3,240	4,078	3,500	100	2,797	3,492
NORTH FORK FLATHEAD RIVER near Columbia Falls	1,770	90	- 1000	1,969	1,600	90	, _ , _	1,782	1,370	91	21/3/	1,498
MIDDLE FORK FLATHEAD RIVER near West Glacler	1,810	95	1,504	1,911	1,670	95	1,385	1,750	1,400	95	1,134	1,470
SOUTH FORK FLATHEAD RIVER near Columbia Falls (10)	2,140	93	1,815	2,302	2,000	93	1,714	2,159	1,750	93	1,475	
FLATMEAD RIVER at Columbia Falls (10)	5,900	93	5,061	6,330	5,400	93	4,664	5,827	4,600	93	3,860	1,884
SWAN RIVER near Big Fork	630	93	0,001	681	555	93	1,001	596	4,000	93	3,000	4,964
FLATHEAD RIVER near Polson (11)	6,900	93	6,097	7.394	6,360	93	5,622	6,806	5,400	93	6.600	0.22
CLARK FORK RIVER near Plains (11)	12,100	98	. 1 1	12,340	11,000	98	9,190	11,222	9,300		4,600	5,779
THOMPSON RIVER near Thompson Falls	244	93	10,071	263	217	93	7 1 2 3 0	234	9,300	98	7,570	9,507
PROSPECT CREEK at Thompson Falls	135	94		143	125	94		133				
CLARK FORK RIVER at Whitehorse Rapids (12)	13,500	98		13,781	12,270	98		12,519	10 620	0.0		10 /00
	-5,500	,0		13,701	12,270	30		12,519	10,420	98		10,633

- (1) Adjusted for storage in Lake Koocanusa.
  (2) Adjusted for storage in Silver Lake, diversions to and pumping from Georgethwn Lake.

STREAMELOW FORECASTS

- (3) Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.
  (4) Sum Flint Creek at Harville and
- Boulder Creek at Maxville.
  (5) Sum of North Fork Lover Willow Creek

Missouia and Blackfoot near Bonner.

- (6) Difference in observed flow Clark Fork above
- near Hall and South Fork Lover Wiliow Creek near Hall.
- (7) Adjusted for storoge in Painted Rocks Reservoir. (8) Adjusted for diversion into Sunset Sighline
- (9) Difference in observed flow Clark fork above and (9) Difference in observed flow Clark fork above and below Missoula.
  (10) Adjusted for storage in Hungry Horse Reservoir.
  (11) Adjusted for storage in Hungry Horse Reservoir and Fiathead Lake.
  (12) Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE





#### WATER SUPPLY OUTLOOK Cilling With Respect to Organ Supply

		Flam Pariod	
	STATAM OF AREA	Spring Searces	500100
		F1	F
	STREAM OF AREA	Flow	Period
	STACALL OF MACA	Spring	Late
	Į	Season	Season
	Tobacco Little Bitterroot Mission Valley Flint Creek Upper Clark Fork Nevada Creek Blackfoot West-side Bitterroot East-side Bitterroot Bitterroot River	Avg Avg Avg Exc Avg Avg Exc Exc	Fair Fair Avg Avg Avg Avg Exc Exc
1	Lower Clark Fork	Ave	Avg
П			11.8

MONTANA WATER SUPPLY OUTLOOK Page 4

#### Below average

#### runoff forecast

Most drainages are forecast to have near to a little below average runoff this spring and summer. The exceptions are the Bitterroot River drainage and the nearby Rock Creek drninnge where above average runoff is expected to be produced by the good snowpack in this area.

The high elevation snow is also expected to produce good streamflow during the main irrigation season. Irrigation reservoir storage is a little below average but all should fill with spring runoff.





## CANADA LEGENO O --- Oranoge Boundary ▲ Geging Station %1963-77 AVERAGE Over 130% 110 - 130% 90 - 110% 70 - 90% COLUMBIA RIVER DRAINAGE Under 70% MOUNTAIN SNOW WATER EQUIVALENT

#### Snowpack varies

#### throughout drainage

Variable storm patterns across western Montana have created different snowpack 'conditions.

The Bitterroot River drainage and the adjacent areas east of the 8itterroot have above average water stored in

The northwest corner of the state has below average snow even though January snowfall was above average in almost all areas.

Most of the Flathead and Lower Clark Fork Rivers, the Blackfoot River, and upper portions of the Clark Fork River drainages have near average snowpack in their headwater areas.

Valley snowpacks have continued to accumulate because of frequent snowfall and very little melting during this past month.

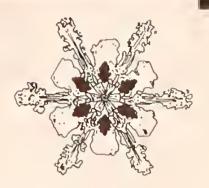
Soils beneath the snow are generally drier than normal in nearly all watersheds.

#### SUMMARY OF SHOW MEASUREMENTS

RIVER BASIN and/or	Humber et Counter	THIS YEA	A'S SNOA ERCENT OF
SUB-WALERSHEB	y - 4 - 144	Latt Yew !	Average +
Fact the second		-,-	
East Kootenay/RC.	22	107	94
Kootenai/Montana	13	117	80
Kootenni above			
Bonners Ferry	35	111	88
Little Bitterroot			
N. Fk. Flathead	9	116	78
M. Fk. Flathead	6	158	99
S. Fk. Flathead	7	153	102
Swan	3	124	96
Flathead	25	135	91
Stillwater &			
Whitefish	1	123	74
Clark Fork above			
Blackfoot	24	204	100
Blackfoot	15	262	107
Upper Clark Fork			
above Missoula .	39	228	103
Bitterroot	11	239	122
Lower Clark Fork		237	122
helow Missoula .	12	182	95
Clark Fork (Total		102	93
w/o Flathend)	62	214	105
Pend O'Reille	02	214	103
(Clark Fork &			
Flathead)	87	174	97
Columbia (Pend	0.1	1/4	97
O'Reille &			
Kootemai)	122	160	0.0
Routeman)	122	163	99

### Yellowstone River Drainage

OTHERWISE CONTRACTOR	ZIHT	FAR	HOU! N'45	(tto 0)	THIS Y	EAR	P4ST	RECORD
	FDRE	CV23		13311561	FOREC	12A3	THOUSAND	SCHI LEFT
HASIN STREAM and or FURECAST POINT	A Los	A+++1/	CHILLIP	**5.21*	Thousand Also Fazi	Perrent of Assett	Last tare	4+1+41+
PERIOD		APRII	- SEPTE	MBER		APRIL -	- JULY	
YELLOWSTONE RIVER at Corwin Springs	2060	98	1703	2,102	1720	98	1466	1,749
IELLOWSIUNE RIVER near Livingston	2340	95		2,471	1940	95		2,048
BOULDER KIVER at Big Timber	398	96		416	365	96		382
SILLLWATER near Absarokee (1)	575	87		660	485	87		555
CLARKS FORK RIVER near Belfry	628	98		644	555	98		564
RUCK CREEK near Red Lodge	113	96	123	118	88.0	96	98.6	91.4
INFLOW COONEY RESERVOIR near Royd (2)	49.0	76		64.5	40.0	76	70.0	52.5
YELLOWSTONE RIVER at Billings	4455	95	3998	4,682	3780	95	3628	3,979
BIGHORN RIVER near St. Xavier (3)	2170	104	1331	2,034	1930	104	1328	,
LITTLE BIGHORN RIVER near Hardin	182	93		196	160	93	1326	1,861
YELLOWSTONE RIVER at Miles City (4)	6863	96		7,142	6000			174
YELLOWSTONE RIVER near Sidney (5)	7523	96		7,806		96		6,243
	1323	30		, 1000	6550	96		6,805



STREAMFLOW FORECASTS

(1) Adjusted for storage to Hystic Lake.
(2) Adjusted for storage in Cooney Reservoir.
(3) Adjusted for storage in Buffalo Bill, Boyden, Bull Lake, Priot Butte and Bighorn Reservoirs.
(4) Adjusted for storage in Bull Lake, Buffalo Bill, Boyden, Pliot Butte, Bighorn and Toogue River Reservoirs.
(5) Adjusted for reservoirs shown in (4) and diversions into the Lover Yeilovstone Casal.

#### Average streamflows

#### forecast now

Streamflows during the spring and summer months are forecast to be near average on most streams and

The inflow to Yellowstone Lake is forecast to be above average. This will help provide good late season flows on the Yellowstone River.

Below average runoff is expected in portions of the Stillwater River and Red Lodge Creek.

LEGENO

▲ Goging Station

%1963-77 AVERAGE

Over 130%

110 - 130%

90-110%

70 - 90%

Under 70%

---- Drainage Boundary

#### WATER SUPPLY OUTLOOK Expressed to "Poor, Fell, A.viegs, Et

HATER SOLLEL COLLEGE	tibili ittili raipuat	
	Flow Peried	
STREAM OF AREA	Sorting Season	Sellon_
Yellowstone at		
Livingston	. Exc	Avg
Shields		Fair
Boulder	. Avg	Avg
Sweetgrass - 8ig		
Timber		Fair
Stillwater		Avg
Rock Creek		Fair
Clark's Fork	. Avg	Avg
Yellowstone above	A	Aura
8ighorn		Avg
8ighorn		Avg
Little Bighorn		Fair
Tongue		Fair
Powder		Avg
Lower Yellowstone	. Avg	Avg
	1	



#### Snowpack varies

#### throughout drainage

The snowpack varies over the Yellowstone River drainage with the better conditions in the southern headwaters, decreasing downstream and to the

Around Red Lodge, the amount of water stored in the snowpack is near 70 percent of average, while in the Yellowstone River headwaters above Yellowstone Lake, it is about 130 percent of average.

The snowpack in the north end of the 8ig Horn Mountains is well below average, increasing to near average in the Powder River headwater area. The Big Horn River basin has an above average snowpack.

This scason, there has been considerable snow transported by the wind in the more open and exposed areas.

Mountain soils under the snow are generally drier than normal.

#### SUMMARY OF SHOW MEASUREMENTS

	and/or	Courtes	WATER AS PERCENT OF		
	SUD-WATERSHEE	Austral	Latt Take	Average 1	
	Upper Yellowstone				
ı	ab Livingston	13	201	96	
ĺ	Shields	4	189	84	
ł	Boulder &				
J	Stillwoter	1	207	73	
ı	Rock Creek &				
l	Clark's Fork	10	166	83	
ļ	Yellowstone (nb				
ļ	8ighorn River) .	28	186	89	
l	8ighorn/Wyoming .	27	193	111	
l	Little Blghorn	4	186	76	
ľ	Bighorn (Total) .	31	193	106	
ł	Tongne	10	161	78	
l	Powder	7	188	98	
	Yellowstone				
	(Total)	76	186	94	



#### Mountains "shiver" too!

We all know how cold it can get in Three of the coldest locations were town at night, but how about in the at Calvert Creek in the 8ig Hole mountains? Because cold air flows drainage (-45°F), at Dendman Creek downslope and temperature inversions near White Sulphur Springs (-47°F). often occur in valleys, it can be warmer in the mountains than it is

Most Montanans experienced their coldest night this winter on February 4-5, 1982. SNOTEL reports indicate that the same was true in the mountains.

The extensive cold air system that covered nearly all of the state sent temperatures at most SNOTEL sites to their lowest points this winter.

and at Northeast Entrance to Yellowstone National Park (-47°F).

YELLOWSTONE RIVER DRAINAGE

MOUNTAIN SNOW WATER EQUIVALENT

A -58°F reading was recorded at Whiskey Creek near West Yellowstone. Sensors on SNOTEL can only measure temperatures down to -58°F, so it is highly likely that the actual minimum was even lower than that.







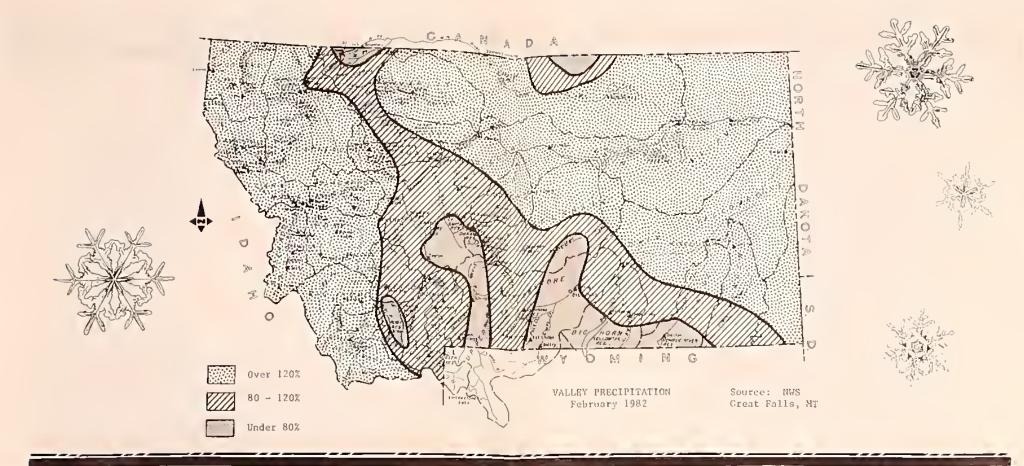
#### Weather Outlook for February

The National Weather Service in Great Falls is expecting February to have below normal temperatures and near normal precipitation over most of Montana.

MONTANA WATER SUPPLY OUTLOOK Page 5







RESERVOIR STORAGE	(Thousand Acre Feet) END OF MONT	January	Av		1963-77 period,
Battin of Stream	RESERVOIR	Urabli Cipi Cili	This Year	Urabli Sioragi	Average
	007104074				
Kootenai	COLUMBIA		0 717 0	0.050 -	
Flathead	Koocanusa	5,748.2	2,717.0	2,858.0	
riathead	Hungry Horse	3,451.0	2,381.0	2,829.0	2,341.0
	Flathead Lake	1,791.0	887.0	1,185.0	1,253.0
	Camas (4)	45.2	20.0	23.2	20.7
Clark Fork	Mission Valley (8)	100.3	22.4	34.7	37.0
DIGIN LOIK	Georgetown Lake Lower Willow Creek	31.0 4.9	29.8	29.6	27.3
	Nevada Creek	12.6	1-2	2.3	1.6
	Noxon Rapids	334.6	320.1	5.1	5.8
8itterroot	Painted Rocks	31.7	320.1	318.6	315.2
Old Call Doc	Como	34.9	7.8	24.1	17.6
	00180	34.5	7.0	24,1	11.3
	MISSOUR1				i,
Beaverhead	Lima	84.0	25.6	48.3	39.5
	Clark Canyon	257.2	158.5	161.9	135.9
Ruby	Ruby	38.8			24.3
Madison	Hebgen Lake	377.5	274.6	276.4	241.5
	Ennis Lake	41.0	31.4	29.9	35.3
Gallatin	Middle Creek	8.0	3.5	3.8	3.3
Missouri	Canyon Ferry	2,043.0	1,590.0	1,717.0	1,661.0
	Hauser & Helena	61.9	61.9	63.0	60.2
	Lake Helena	10.4	10.4	10.9	9.9
	Holter Lake	81.9	81.4	81.9	70.8
0.1.1	Fort Peck Lake	18,910.0	14,180.0	15,140.0	15,570.0
Smith	Smith River	10.6	6.0	5.6	6.7
	Newlan Creek	12.4	10.3	9.7	
Musselshell	Bair	7.0	2.8	3.5	4.4
	Martinsdale	23.1	10.8	10.6	9.9
0	Deadman's 8asin	72.2			46.8
Sun	Gibson	99.1	44.5	56.8	41.4
	Willow Creek	32.2	22.8	19.2	21.2
Mandan	Pishkun	32.0	19.8	19.4	16.5
Marias	Lower Two Medicine	11.9	***		6.2
	Four Horns Swift	19.2			13.2
		30.0	7.6	18.9	14.3
Milk	Lake Frances	111.9	77.8	79.6	70.9
HIIK	Elwell (Tiber)	1,347.0	505.7	538.5	540.8
	Beaver Creek Fresno	3.5	0.8	1.4	1.5
	Nelson	127.2	32.2	38.7	65.4
	Merson	66.8	28.8	22.2	43.3
	HUDSON 8A	(			
St. Mary's	Lake Sherburne	64.3	14.6	35.8	20.1
	Mar t or leave				
Stillwater	YELLOWSTON	_			
Clark's Fork	Mystic Lake	21.0	6.1	6.0	10.0
Tongue	Cooney	27.4	*0.1	14.6	14.6
8ighern	Tongue River Bighorn Lake	68.0	18.1	2 500	32.5
OIEHOLH	prguorn rake	1,356.0	882.5	907.5	536.0

# SATELLITE SNOW COVER Canyon Ferry Reservoir DATA PROVIDED BY NOAA/NESS Bozeman 🖣 Dillon 🛡 Snow Covered Area Scale 1:2,500,000

#### MISSOURI RIVER BASIN Above Canyon Ferry Dam

OATE	PERCENT SNOW COVER	SNOWLINE ELEVATION 1N FEET
November 8, 1981	9.5	8535
November 19, 1981	53	6530
November 26, 1981	100	3800
November 29, 1981	100	3800
December 7, 1981	71	5770
December 17, 1981	100	3800
Oecember 20, 1981	91	4680
Oecember 29, 1981	95	4380
January 6, 1982	96	4300
January 10, 1982	91	4680
January 17, 1982	100	3800
February 3, 1982	100	3800

#### AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

GOVERNMENT AGENCIES

Canada

Department of the Environment

Atmospheric Environment Service

Water Management Service

British Columbia Ministry of Environment

Inventory and Engineering Branch, Hydrology Section

Alberta Environment

Technical Services Division

Technical Services Division Federal

Department of the Army - Corps of Englacers
Department of Agriculture - Forest Service
- Soil Conservation Service
- National Environmental Satellite Service
- National Weather Service
- Bureau of Indian Affairs
- Fish and Widdlife Service
- Geological Survey
- National Park Service
- Bureau of Reclamation
- Bonneville Power Administration

STATE AGENCIES

Montana Conservation Districts

Montana Department of Fish, Wildlife and Purks

Montana Department of Natural Resources and Conservation

Montana State University - Agricultural Experiment Station

University of Montana - School of Forestry

PRIVATE ORGANIZATIONS

The Anaconda Company
Big Sky of Montana
Butte Wator Company
Flathend Valley Community College
Montana Power Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.